

## PATENT ABSTRACTS OF JAPAN

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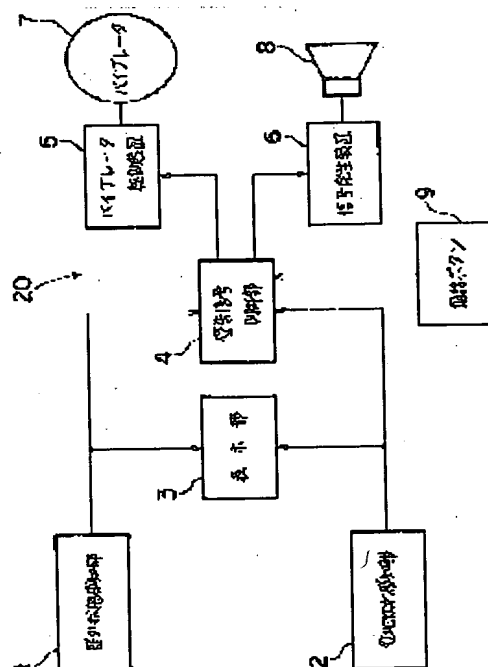
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## (54) WARNING DEVICE FOR RADIO TELEPHONE

## (57)Abstract:

PURPOSE: To warn the state of out-of-communication area or out-of-battery without interfering communication.  
 CONSTITUTION: When the out-of-battery is judged by an out-of-battery sensing part 2, a warning signal control part 4 discriminates whether or not the communication 15 in progress, and at the time of a communication state, vibrates a vibrator 7 by outputting signals for requesting driving to a vibrator driving device 5 and warns a communicating person (the carrier of a radio telephone) by vibration. On the other hand, at the time of a standby state, the vibrator 7 is not vibrated but warning sound is emitted from a speaker 8 and the carrier of the radio telephone is warned by the sound. Also, simultaneously, the state of the out-of-battery is displayed on a display part 3 and warning is performed.



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CLAIMS

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[Claim(s)]

[Claim 1] A cell capacity detection means to detect that the capacity of the cell built in radiotelephony became below default value, If the capacity of the built-in cell of radiotelephony serves as a talk state detection means to detect the talk state of radiotelephony, below to default value when radiotelephony is a talk state The warning device of the radiotelephony characterized by having the control means which outputs a control signal which generates a predetermined oscillation, and an oscillating means to generate a predetermined oscillation based on the control signal from the above-mentioned control means.

[Claim 2] The warning device of the radiotelephony according to claim 1 characterized by having a display means to tell visually the output of the above-mentioned cell capacity detection means.

[Claim 3] The warning device of the radiotelephony which carries out [ having had an outside-of-the-circle detection means detect becoming the outside of the circle of a wireless call by a few the back, a talk-state detection means detect the talk state of radiotelephony, the control means that will output a control signal which generates a predetermined oscillation if it becomes the outside of the circle of a wireless call by a few the back when radiotelephony is a talk state, and an oscillating means generate a predetermined oscillation based on the control signal from the above-mentioned control means, and ] as the description.

[Claim 4] The warning device of the radiotelephony according to claim 3 characterized by having a display means to tell visually the output of the above-mentioned outside-of-the-circle detection means.

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[Translation done.]

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the warning device of the radiotelephony which warns of warning of the call outside of the circle or a cell piece by vibration at the time of a talk state.

[0002]

[Description of the Prior Art] recently, it is carried out frequently, and if it obtains, a cell is built in in radiotelephony [ like ] and that capacity becomes below default value, while emitting warning, the mobile communications using a mounted telephone, a cellular phone, etc. have emitted the same warning, also when [ this ] it becomes the call outside of the circle.

[0003]

[Problem(s) to be Solved by the Invention] By the way, in the conventional radiotelephony, the warning device which emits warning of the call outside of the circle and a cell piece uses only a beep sound. Namely, since it had become the configuration of having sounded a beep sound and telling a user when radiotelephony came out to the outside of the circle of a call or the power capacity which can be taken out from a cell outside ran short (when it became the so-called cell piece), For example, as a typical example, the beep sound sounded suddenly during the call, and there was a fault that conversation became impossible suddenly. In addition, as radiotelephony, there are a mounted telephone, a cellular phone, a cordless telephone, etc., for example, and all have the above-mentioned fault.

[0004] Then, this invention aims at offering the warning device of the radiotelephony which can warn of the condition of the call outside of the circle or a cell piece, without barring a call.

[0005]

[Means for Solving the Problem] The warning device of radiotelephony by invention according to claim 1 for the above-mentioned object achievement A cell capacity detection means to detect that the capacity of the cell built in radiotelephony became below default value, If the capacity of the built-in cell of radiotelephony serves as a talk state detection means to detect the talk state of radiotelephony, below to default value when radiotelephony is a talk state It is characterized by having the control means which applies for a control signal which generates a predetermined oscillation, and an oscillating means to generate a predetermined oscillation based on the control signal from the above-mentioned control means. Moreover, the warning device of radiotelephony according to claim 2 is characterized by having a display means to tell visually the output of the above-mentioned cell capacity detection means in addition to the warning device of radiotelephony according to claim 1. It carries out having had an outside-of-the-circle detection means detect that the warning device of radiotelephony according to claim 3 becomes the outside of the circle of a wireless call by a few the back, a talk-state detection means detect the talk state of radiotelephony, the control means that will output a control signal which generates a predetermined oscillation if it becomes the outside of the circle of a wireless call by a few the back when radiotelephony is a talk state, and an oscillating means generate a predetermined oscillation based on the control signal from the above-mentioned control means as the description. Moreover, the warning device of radiotelephony according to claim 4 is characterized by having a display means to tell visually the output of the above-mentioned outside-of-the-circle detection means in addition to the warning device of radiotelephony according to claim 3.

[0006]

[Function] In this invention, when becoming a cell piece by a few the back during a call, an oscillation (vibration) occurs and it warns a call person. Therefore, the condition of a cell piece can be known, a beep sound sounds suddenly during a call, the situation where conversation becomes impossible suddenly is avoided by vibration, and a call person can continue a call smoothly as it is by it. Moreover, since it is warned also by display, also visually, it can check. On the other hand, when coming out by a few the back during a call in the call outside of the circle, similarly it is warned by vibration. Therefore, a beep sound sounds suddenly during a call similarly, and the situation where conversation becomes impossible suddenly is avoided. Moreover, since it is warned also by display, also visually, it can check.

[0007]

[Example] Hereafter, the example of this invention is explained with reference to a drawing. Drawing 1 is the block diagram showing the configuration of one example of the warning device of radiotelephony concerning this invention. The warning device shown in this drawing is built into the interior of a radiotelephony machine, is roughly divided and is constituted including the outside-of-the-circle condition sensor 1, the cell piece sensor 2, a display 3, the alarm signal control section 4, the vibrator driving gear 5, signal generation equipment 6, vibrator 7, and a loudspeaker 8. In

addition, as target radiotelephony, there are a mounted telephone, a cellular phone, a cordless telephone (relation between the migration machine of radiotelephony and a cordless handset), etc., for example.

[0008] It judges whether the outside-of-the-circle condition sensor (outside-of-the-circle detection means) 1 came during migration with radiotelephony in the call outside of the circle, and the field strength indicator RSSI (Receiving Signal Indicator) detects the signal strength of a received electric wave, for example, it judges whether it is the call outside of the circle. In this detection, it has a DAKUNAMIKKU range 100dB or more. In addition, the output of the field strength indicator RSSI is used for line control, or it is used in order to indicate the field strength by the bar graph on liquid crystal.

[0009] The cell piece sensor (cell capacity detection means) 2 supervises the electrical-potential-difference condition of the cell built in, and judges the condition (the so-called condition of a cell piece) that the capacity which can be taken out runs short. A display (display means) 3 has for example, a LCD display, and displays the warning information from the outside-of-the-circle condition sensor 1 and the cell piece sensor 2 with a specific alphabetic character or a specific graphic form.

[0010] The alarm signal control section 4 generates an alarm signal based on the warning information from the outside-of-the-circle condition sensor 1 and the cell piece sensor 2, and the information from the call carbon button 9. Radiotelephony outputs the information on a talk state or a waiting state, and the call carbon button (talk state detection means) 9 outputs "H" signal which serves as ON at the time of a talk state. Therefore, the alarm signal control section 4 is judged to be the call outside of the circle by the outside-of-the-circle condition sensor 1, and outputs the signal which requires actuation of the vibrator driving gear 5 as the signal from the call carbon button 9 being a talk state. On the other hand, nothing is outputted to the vibrator driving gear 5 as the signal from the call carbon button 9 is a waiting state.

[0011] Moreover, the signal which is judged to be a cell piece by the cell piece sensor 2, and requires actuation of the vibrator driving gear 5 also when the signal from the call carbon button 9 is a talk state is outputted. On the other hand, the signal which requires a beep sound of signal generation equipment 6 as the signal from the call carbon button 9 being a waiting state is outputted.

[0012] The vibrator driving gear 5 generates the signal which vibrates vibrator 7 based on the signal from the alarm signal control section 4, outputs it to vibrator 7, and vibrator (oscillating means) 7 answers this signal, and vibrates, and it carries out oscillating \*\*\*\*\* at the pocket person of radiotelephony. In addition, vibrator 7 has the composition of obtaining vibration, by connecting to a motor the member which carried out eccentricity, and rotating a motor. Moreover, signal generation equipment 6 generates the signal which generates a beep sound based on the signal from the alarm signal control section 4, and outputs it to a loudspeaker 8, and a loudspeaker (voice generating means) 8 generates a beep sound, and warns the pocket person of radiotelephony of it with voice.

[0013] The above-mentioned alarm signal control section 4, the vibrator driving gear 5, and signal generation equipment 6 constitute a control means 20 as a whole. Moreover, the alarm signal control section 4 is constituted by the microcomputer containing CPU, and operates according to the flow chart described below. In addition, an electronic circuitry may constitute the alarm signal control section 4.

[0014] Next, actuation of this equipment is explained. Drawing 2 R> 2 is the operation flow chart of the alarm signal control section 4 at the time of a cell piece. If judged as a cell piece by the cell piece sensor 2, the alarm signal control section 4 distinguishes whether it is under [ call ] \*\*\*\*\* (step S11), and the signal which requires actuation of the vibrator driving gear 5 will be outputted at the time of a talk state, it will vibrate vibrator 7, and it will warn a call person (pocket person of radiotelephony) of it by oscillation by vibration (step S12).

[0015] On the other hand, it awaits, and vibrator 7 is not vibrated in a condition, it emits a beep sound from a loudspeaker 8, and warns the pocket person of radiotelephony of it with voice (step S13). Moreover, simultaneously, the condition of a cell piece is displayed on a display 3, and it warns it (step S14).

[0016] Drawing 3 is the operation flow chart of the alarm signal control section 4 at the time of the call outside of the circle. If judged as the call outside of the circle by the outside-of-the-circle condition sensor 1, the alarm signal control section 4 distinguishes whether it is under [ call ] \*\*\*\*\* (step S21), and the signal which requires actuation of the vibrator driving gear 5 will be outputted at the time of a talk state, it will vibrate vibrator 7, and it will warn a call person (pocket person of radiotelephony) of it by oscillation by vibration (step S22).

[0017] On the other hand, it awaits, and without carrying out actuation called an oscillation of vibrator 7 and generating of the beep sound from a loudspeaker 8, the purport which is the call outside of the circle is displayed on a display 3 in a condition, and it warns the pocket person of radiotelephony of it (step S23).

[0018] Thus, in this example, if it becomes a cell piece during a call, it will be warned to a call person by vibration. Therefore, by vibration, a call person can know the condition of a cell piece and can continue a call smoothly as it is. Therefore, a beep sound sounds suddenly during a call like before, and the situation where conversation becomes impossible suddenly can be avoided. Moreover, since it warns of the condition of a cell piece also by display in addition to vibration, a call person can know the condition of a cell piece also from this field.

[0019] On the other hand, if it is under call when it comes out to the call outside of the circle, similarly, by vibration, the condition can be known and a call can be continued smoothly as it is. Therefore, a beep sound sounds suddenly during a call similarly, and the situation where conversation becomes impossible suddenly can be avoided. Moreover, since it warns of it being the call outside of the circle also by display in addition to vibration, a call person can know the condition of the call outside of the circle also from this field.

[0020]

[Effect of the Invention] A call can be continued smoothly as it is, avoiding the situation where a call person can

know warning by vibration since it is warning the call person by vibration when coming out to the call outside of the circle by a few the back when it becomes a cell piece by a few the back during a call according to this invention, and conversation becomes impossible suddenly. moreover, since it is warning of the above-mentioned condition also by display in addition to vibration, a call person can come out also from this field to a slight degree, and a cell piece and the condition of coming out to a slight degree and becoming the call outside of the circle can be known.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of one example of the warning device of radiotelephony of this invention.

[Drawing 2] It is the operation flow chart of the alarm signal control section at the time of the cell piece of this example.

[Drawing 3] It is the operation flow chart of the alarm signal control section 4 at the time of the call outside of the circle of this example.

[Description of Notations]

- 1 Outside-of-the-Circle Condition Sensor (Outside-of-the-Circle Detection Means)
- 2 Cell Piece Sensor (Cell Capacity Detection Means)
- 3 Display (Display Means)
- 4 Alarm Signal Control Section
- 5 Vibrator Driving Gear
- 6 Signal Generation Equipment
- 7 Vibrator (Oscillating Means)
- 8 Loudspeaker (Voice Generating Means)
- 9 Call Carbon Button (Talk State Detection Means)
- 20 Control Means

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[Translation done.]

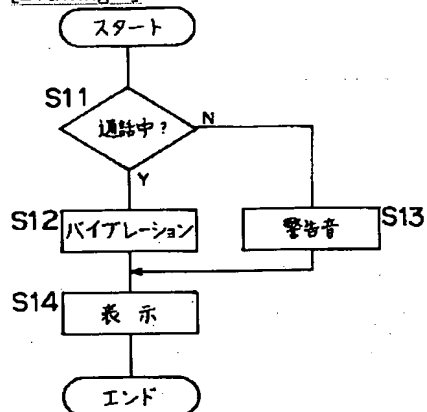
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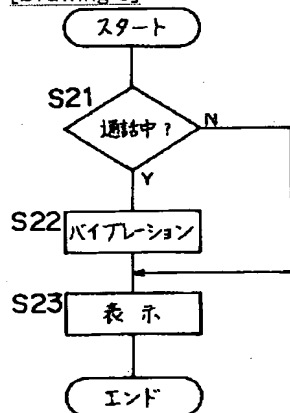
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## DRAWINGS

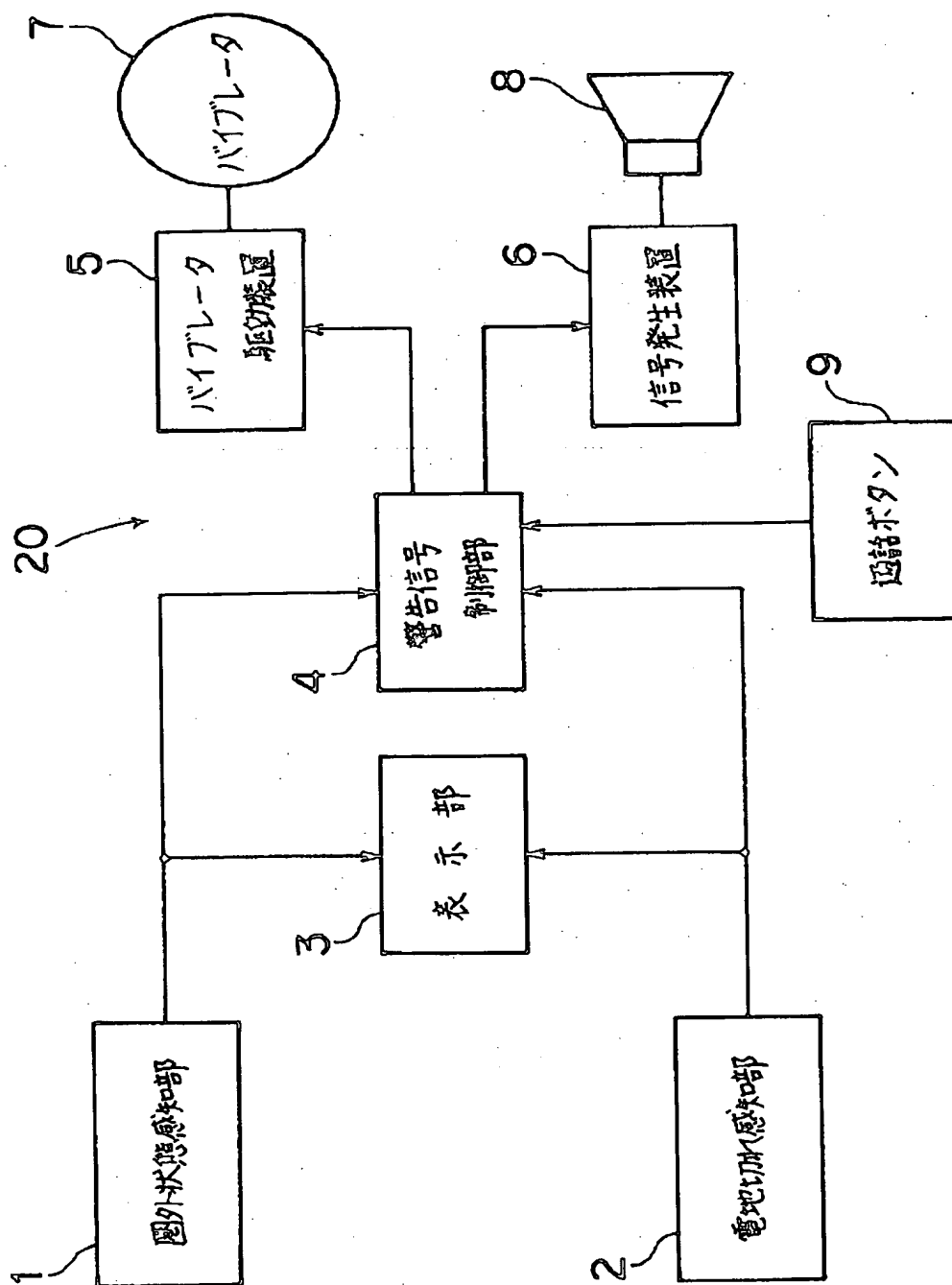
[Drawing 2]



[Drawing 3]



[Drawing 1]



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## CORRECTION OR AMENDMENT

[Kind of official gazette] Printing of amendment by the convention of 2 of Article 17 of Patent Law  
 [Category partition] The 3rd partition of the 7th category  
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[F1]

H04B 7/26 109 T  
 L

[Procedure amendment]  
 [Filing Date] September 16, Heisei 9  
 [Procedure amendment 1]  
 [Document to be Amended] Description  
 [Item(s) to be Amended] The name of invention  
 [Method of Amendment] Modification  
 [Proposed Amendment]  
 [Title of the Invention] The warning device of a radiocommunication terminal  
 [Procedure amendment 2]  
 [Document to be Amended] Description  
 [Item(s) to be Amended] Claim  
 [Method of Amendment] Modification  
 [Proposed Amendment]  
 [Claim(s)]

[Claim 1] A detection means to detect whether the call with a radiocommunication terminal is guaranteed, An oscillating means to generate a predetermined oscillation based on a control signal, The warning device of the radiocommunication terminal characterized by having the control means which said control signal will be supplied [ control means ] to said oscillating generating means, and will generate an oscillation if it detects that a call cannot be guaranteed with said detection means during a call with said radiocommunication terminal.

[Claim 2] Said detection means is the warning device of the radiocommunication terminal according to claim 1 characterized by detecting the guarantee of a call based on cell capacity.

[Claim 3] Said detection means is the warning device of the radiocommunication terminal according to claim 1 characterized by detecting the guarantee of a call based on field strength.

[Claim 4] The warning device of a radiocommunication terminal given in any of claims 1, 2, or 3 characterized by having the display means which carries out predetermined symbols list \*\* based on said control signal they are.

[Procedure amendment 3]  
 [Document to be Amended] Description  
 [Item(s) to be Amended] 0001  
 [Method of Amendment] Modification  
 [Proposed Amendment]  
 [0001]

[Industrial Application] This invention relates to the warning device of the radiocommunication terminal of which it warns by vibration, when the guarantee of a call becomes impossible with the call outside of the circle or a cell

piece typically while radiotelephony talks over the telephone, a radiocommunication terminal and.

[Procedure amendment 4]

[Document to be Amended] Description

[Item(s) to be Amended] 0002

[Method of Amendment] Modification

[Proposed Amendment]

[0002]

[Description of the Prior Art] The mobile communications using a mounted telephone, a cellular phone, etc. are performed frequently, and if the guarantees (cell capacity, call area within the circle, etc.) of a call become impossible, he is trying to emit a beep sound at such a radiocommunication terminal recently.

[Procedure amendment 5]

[Document to be Amended] Description

[Item(s) to be Amended] 0003

[Method of Amendment] Modification

[Proposed Amendment]

[0003]

[Problem(s) to be Solved by the Invention] By the way, when the guarantee of a call becomes impossible at the conventional radiocommunication terminal (the call area outside) It only comes out to the outside of the circle of a call to emit a beep sound, i.e., a radiocommunication terminal, or a cell piece etc. Or since it had become the configuration of having sounded a beep sound and telling a user when the power capacity which can be taken out from a cell outside ran short (when it became the so-called cell piece), as a typical example, the beep sound sounded suddenly during the call, and there was a fault that conversation became impossible suddenly. In addition, as a radiocommunication terminal, there are a mounted telephone, a cellular phone, a cordless telephone, etc., and all have the above-mentioned fault, for example.

[Procedure amendment 6]

[Document to be Amended] Description

[Item(s) to be Amended] 0004

[Method of Amendment] Modification

[Proposed Amendment]

[0004] Then, this invention aims at being characterized by offering the warning device of the radiocommunication terminal of which it can warn, without barring a call, when the guarantee of a call becomes impossible during a call.

[Procedure amendment 7]

[Document to be Amended] Description

[Item(s) to be Amended] 0005

[Method of Amendment] Modification

[Proposed Amendment]

[0005]

[Means for Solving the Problem] For the above-mentioned object achievement, the warning device of a radiocommunication terminal according to claim 1 A detection means to detect whether the call with a radiocommunication terminal is guaranteed, and an oscillating means to generate a predetermined oscillation based on a control signal, Detection of that a call cannot be guaranteed with said detection means during a call with said radiocommunication terminal is characterized by having the control means which said control signal is supplied [ control means ] to said oscillating generating means, and generates an oscillation. Moreover, you may make it said detection means detect the guarantee of a call like claim 2 publication based on cell capacity. Moreover, you may make it said detection means detect the guarantee of a call like claim 3 publication based on field strength. Furthermore, you may have the display means according to claim 4 which carries out predetermined symbols list \*\* like based on said control signal.

[Procedure amendment 8]

[Document to be Amended] Description

[Item(s) to be Amended] 0006

[Method of Amendment] Modification

[Proposed Amendment]

[0006]

[Function] In this invention, during a call, the back, in a few, when the guarantee of a call becomes impossible like becoming a cell piece or coming out by a few the back at the call outside of the circle, an oscillation (vibration) occurs, and it warns a call person. Therefore, it can know that the guarantee of a call became impossible to the call person by vibration, a beep sound sounds suddenly during a call, and the situation where conversation becomes impossible suddenly is avoided. Moreover, since it warns also by display, also visually, it can check.

[Procedure amendment 9]

[Document to be Amended] Description

[Item(s) to be Amended] 0020

[Method of Amendment] Modification

[Proposed Amendment]

[0020]

[Effect of the Invention] Termination of a call is attained smoothly as it is, avoiding the situation where a call person

can know warning by vibration since it is warning the call person by vibration when the guarantee of the call in the case of coming out to the call outside of the circle by a few the back when becoming a cell piece by a few the back during a call according to this invention etc. becomes impossible, and conversation becomes impossible suddenly. moreover, since it is warning of the above-mentioned condition also by display in addition to vibration, a call person can come out also from this field to a slight degree, and a cell piece and the condition of coming out to a slight degree and becoming the call outside of the circle can be known.

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[Translation done.]